

Table 1
Analytical Results for HTDF Storm Water Discharge
Eagle Mine LLC - Humboldt Mill

Sample Location Lab Sample ID Sampled By Analyzed By Sample Date		Rule 57 Water Quality Values ²	HMWQ-009 1104403-01 KEMC TriMatrix 4/22/2011	EM-HMP-009 T13H002-01 AECOM Trace 7/31/2013	HMSW-006 ¹ E3PY0 OTIE USEPA 11/2/2011	HMSW-006 ¹ T11K055-10 AECOM Trace 11/2/2011
Inorganics	Units					
Aluminum	ug/L	NA	<50	<50	200 U	<50
Antimony	ug/L	130	5.9	5.6	60 U	4.5
Arsenic	ug/L	10	<1.0	<1.0	10 U	<5.0
Barium ³	ug/L	165	<10	9.5	200 U	<100
Beryllium ³	ug/L	0.236	<1.0	<1.0	5 U	<1.0
Boron	ug/L	7200	77	90	---	---
Cadmium ³	ug/L	1.14	<0.40	<0.20	5 U	<1.0
Calcium	mg/L	NA	53	---	52.8	49
Chromium, Total ³	ug/L	35	<1.0	<10	10 U	<10
Cobalt	ug/L	100	<10	2.0	50 U	<20
Copper ³	ug/L	4.09	2.4	1.5	25 UJ	<4.0
Iron	ug/L	NA	240	<100	163	<200
Lead ³	ug/L	3.75	<1.0	<1.0	10 UJ	<3.0
Lithium	ug/L	440	<10	---	---	---
Magnesium	mg/L	NA	26	24	23.9	23
Manganese ³	ug/L	863	67	23	69.1	65
Mercury (Inorganic)	ng/L	1.3	<0.500	<0.50	200 U	<200
Molybdenum	ug/L	3200	10	10	---	---
Nickel ³	ug/L	24	16	11	9.2 J	<20
Potassium	mg/L	NA	8.5	---	7.48	7.4
Selenium	ug/L	5	<4.0	<1.0	35 UJ	<5.0
Silver	ug/L	0.2	<0.40	<0.50	10 U	<0.2
Sodium	mg/L	NA	13	---	12.2	12
Thallium	ug/L	3.7	<1.0	<1.0	25 UJ	<2
Tin	mg/L	NA	---	<0.050	---	---
Titanium	ug/L	NA	---	<6.0	---	---
Vanadium	ug/L	27	<1.0	---	50 U	<4
Zinc ³	ug/L	54.4	<10	<10	60 U	<150
Miscellaneous	Units					
Alkalinity, Bicarbonate	mg/L	NA	110	---	---	---
Alkalinity, Carbonate	mg/L	NA	<2.0	---	---	---
Biochemical Oxygen Demand 5-day	mg/L	NA	---	<2.0	---	---
Bromide	mg/L	NA	---	<0.36	---	---
Carbon, Total Organic	mg/L	NA	3.5	2.8	---	---
Chemical Oxygen Demand	mg/L	NA	---	<5.0	---	---
Chloride	mg/L	NA	22	---	---	---
Chlorine, Total Residual	mg/L	NA	---	0.12 J (0.11⁴)	---	---
Color	color units	NA	---	<1.0	---	---
Cyanide, total	mg/L	5.2	<0.020	0.006	0.0067 J-	<0.0050
Fecal Coliforms	CFU/100 ml	NA	---	21 J	---	---
Fluoride ³	mg/L	1.9	0.19	<0.10	---	---
Hardness	mg/L	NA	240	---	---	---
Nitrogen, Ammonia	mg/L	29	<0.050	<0.010	---	---
Nitrogen, Nitrite	mg/L	NA	<0.050	<0.10	---	---
Nitrogen, Nitrate	mg/L	NA	2.2	0.86	---	---
Nitrogen, Total	mg/L	NA	---	0.86	---	---
Nitrogen, Total Kjeldahl	mg/L	NA	---	<0.50	---	---
Oil & Grease	mg/L	NA	---	<5.0	---	---
Phenolics	mg/L	NA	---	<0.010	---	---
Phosphorus, Total	mg/L	NA	---	0.017	---	---
Radioactivity	NA	NA	---	---	---	---
Residue, Dissolved @180°C	mg/L	NA	364	---	---	---

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Residue, Suspended	mg/L	NA	<3.3	---	---	---
Sulfate	mg/L	NA	130	21	---	---
Sulfide, Total	mg/L	NA	<0.020	<0.10	---	---
Sulfite	mg/L	NA	---	<2.0	---	---
Surfactants (MBAS)	---	NA	---	Negative	---	---
Total Organic Nitrogen	mg/L	NA	---	<0.51	---	---
Total Suspended Solids	mg/L	NA	---	<10	---	---
Field Parameters		Units				
Temperature	°C	NA	6.1	---	---	---
	umhos/cm					
Specific conductivity	@ 25°C	NA	504	---	---	---
pH	SU	>6.5, <9.0	6.7	---	---	---
Dissolved oxygen	ppm	>7	10	---	---	---
Turbidity	NTU	NA	4.0	---	---	---
Flow	cfs	NA	<0.1	---	---	---
Volatiles		Units				
Acetone	ug/L	1700	<20	---	10 U	<50
Acrylonitrile	ug/L	1.2	<2.0	---	---	---
Benzene	ug/L	200	<1.0	---	5 U	<1.0
Bromobenzene	ug/L	NA	<1.0	---	---	---
Bromochloromethane	ug/L	59000	<1.0	---	5 U	<1.0
Bromodichloromethane	ug/L	180	<1.0	---	5 U	<1.0
Bromoform	ug/L	890	<1.0	---	5 U	<1.0
Bromomethane	ug/L	35	<5.0	---	5 U	<5.0
n-Butylbenzene	ug/L	NA	<1.0	---	---	---
sec-Butylbenzene	ug/L	NA	<1.0	---	---	---
tert-Butylbenzene	ug/L	NA	<1.0	---	---	---
Carbon disulfide	ug/L	34000	<1.0	---	5 U	<5.0
Carbon tetrachloride	ug/L	45	<1.0	---	5 U	<1.0
Chlorobenzene	ug/L	25	<1.0	---	5 U	<1.0
Chloroethane	ug/L	9400	<5.0	---	5 U	<5.0
Chloroform	ug/L	630	<1.0	---	5 U	<1.0
Chloromethane	ug/L	7300	<5.0	---	5 U	<5.0
Cyclohexane	ug/L	NA	---	---	5 U	<1.0
1,2-Dibromo-3-chloropropane	ug/L	4.9	<5.0	---	5 U	<1.0
Dibromochloromethane	ug/L	150	<1.0	---	5 U	<5.0
1,2-Dibromoethane	ug/L	5.7	<1.0	---	5 U	<1.0
Dibromomethane	ug/L	NA	<1.0	---	---	---
trans-1,4-Dichloro-2-butene	ug/L	NA	<1.0	---	---	---
1,2-Dichlorobenzene	ug/L	13	<1.0	---	5 U	<1.0
1,3-Dichlorobenzene	ug/L	28	<1.0	---	5 U	<1.0
1,4-Dichlorobenzene	ug/L	17	<1.0	---	5 U	<1.0
Dichlorodifluoromethane	ug/L	90000	<5.0	---	5 U	<5.0
1,1-Dichloroethane	ug/L	740	<1.0	---	5 U	<1.0
1,2-Dichloroethane	ug/L	360	<1.0	---	5 U	<1.0
1,1-Dichloroethene	ug/L	130	<1.0	---	5 U	<1.0
cis-1,2-Dichloroethene	ug/L	620	<1.0	---	5 U	<1.0
trans-1,2-Dichloroethene	ug/L	1500	<1.0	---	5 U	<1.0
1,2-Dichloroethene, total	ug/L	1100	---	---	---	<2.0
1,2-Dichloropropane	ug/L	230	<1.0	---	5 U	<1.0
cis-1,3-Dichloropropene	ug/L	9	<1.0	---	5 U	<1.0
trans-1,3-Dichloropropene	ug/L	9	<1.0	---	5 U	<1.0
1,4-Dioxane	ug/L	2800	---	---	R	---
Ethylbenzene	ug/L	18	<1.0	---	5 U	<1.0

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Sample Location		Rule 57	HMWQ-009	EM-HMP-009	HMSW-006 ¹	HMSW-006 ¹
Lab Sample ID		Water	1104403-01	T13H002-01	E3PY0	T11K055-10
Sampled By		Quality	KEMC	AECOM	OTIE	AECOM
Analyzed By		Values ²	TriMatrix	Trace	USEPA	Trace
Sample Date			4/22/2011	7/31/2013	11/2/2011	11/2/2011
Ethyl ether	ug/L	1000000	<5.0	---	---	---
2-Hexanone	ug/L	630000	<5.0	---	10 U	<50
Iodomethane	ug/L	NA	<1.0	---	---	---
Isopropylbenzene (cumene)	ug/L	28	<1.0	---	5 U	<5.0
4-Isopropyltoluene	ug/L	NA	<5.0	---	---	---
Methyl-tert-butyl ether (MTBE)	ug/L	7100	<5.0	---	5 U	<5.0
Methylene chloride	ug/L	1500	<5.0	---	10 U	<5.0
2-Butanone (MEK)	ug/L	2200	<5.0	---	10 U	<25
Methyl acetate	ug/L	NA	---	---	5 U	---
Methylcyclohexane	ug/L	NA	---	---	5 U	---
2-Methylnaphthalene	ug/L	19	<5.0	---	---	---
4-Methyl-2-pentanone (MIBK)	ug/L	NA	<5.0	---	10 U	<50
Naphthalene	ug/L	11	<5.0	---	---	---
n-Propylbenzene	ug/L	NA	<1.0	---	---	---
Styrene	ug/L	80	<1.0	---	5 U	<1.0
1,1,1,2-Tetrachloroethane	ug/L	100	<1.0	---	---	---
1,1,2,2-Tetrachloroethane	ug/L	78	<1.0	---	5 U	<1.0
Tetrachloroethene	ug/L	60	<1.0	---	5 U	<1.0
Tetrahydrofuran	ug/L	11000	<5.0	---	---	---
Toluene	ug/L	270	<1.0	---	5 U	<1.0
1,2,3-Trichlorobenzene	ug/L	73	<5.0	---	5 U	<5.0
1,2,4-Trichlorobenzene	ug/L	99	<5.0	---	5 U	<5.0
1,1,1-Trichloroethane	ug/L	89	<1.0	---	5 U	<1.0
1,1,2-Trichloroethane	ug/L	330	<1.0	---	5 U	<1.0
Trichloroethene	ug/L	200	<1.0	---	5 U	<1.0
Trichlorofluoromethane	ug/L	NA	<1.0	---	5 U	<1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	32	---	---	5 U	<1.0
1,2,3-Trichloropropane	ug/L	NA	<1.0	---	---	---
1,2,4-Trimethylbenzene	ug/L	17	<1.0	---	---	---
1,3,5-Trimethylbenzene	ug/L	45	<1.0	---	---	---
Vinyl chloride	ug/L	13	<1.0	---	5 U	<1.0
Xylene, m- and p-	ug/L	41	<2.0	---	5 U	<2.0
Xylene, o-	ug/L	41	<1.0	---	5 U	<1.0
Xylene, total	ug/L	41	---	---	---	<3.0
Semi-Volatiles	Units					
Acenaphthene	ug/L	38	<5.0	---	5 U	<5.0
Acenaphthylene	ug/L	NA	<5.0	---	5 U	<5.0
Acetophenone	ug/L	NA	---	---	5 U	---
Anthracene	ug/L	2400	<5.0	---	5 U	<5.0
Atrazine	ug/L	7.3	---	---	5 U	---
Benzaldehyde	ug/L	NA	---	---	5 U	---
Benzo(a)anthracene	ug/L	NA	<1.0	---	5 U	<1.0
Benzo(b)fluoranthene	ug/L	NA	<1.0	---	5 U	<1.0
Benzo(k)fluoranthene	ug/L	NA	<1.0	---	5 U	<1.0
Benzo(g,h,i)perylene	ug/L	NA	<1.0	---	5 U	<1.0
Benzo(a)pyrene	ug/L	NA	<1.0	---	5 U	<1.0
1,1'-Biphenyl	ug/L	13	---	---	5 U	---
Benzoic acid	ug/L	NA	---	---	---	<50
Benzyl alcohol	ug/L	NA	---	---	---	<50
bis(2-Chloroethoxy)methane	ug/L	NA	---	---	5 U	<5.0
bis(2-Chloroethyl)ether	ug/L	15	---	---	5 U	<1.0
bis(2-Chloroisopropyl)ether	ug/L	290	---	---	---	<5.0
bis(2-Ethylhexyl)phthalate	ug/L	32	---	---	25 U	<5.0
4-Bromophenyl-phenylether	ug/L	NA	---	---	5 U	<5.0

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Lab Sample ID		Water	1104403-01	T13H002-01	E3PY0	T11K055-10
Sampled By		Quality	KEMC	AECOM	OTIE	AECOM
Analyzed By		Values ²	TriMatrix	Trace	USEPA	Trace
Sample Date			4/22/2011	7/31/2013	11/2/2011	11/2/2011
Butyl benzyl phthalate	ug/L	67	---	---	5 U	<5.0
Caprolactam	ug/L	NA	---	---	5 U	---
Carbazole	ug/L	4	---	---	5 U	<10
4-Chloroaniline	ug/L	72	---	---	5 U	<10
4-Chloro-3-methylphenol	ug/L	7.4	---	<5.0	5 U	<5.0
2-Chloronaphthalene	ug/L	NA	---	---	5 U	<5.0
2-Chlorophenol	ug/L	18	---	<5.0	5 U	<10
4-Chlorophenyl-phenyl ether	ug/L	NA	---	---	5 U	<5.0
Chrysene	ug/L	NA	<1.0	---	5 U	<1.0
Di-n-butyl phthalate	ug/L	9.7	---	---	5 U	<5.0
Di-n-octyl phthalate	ug/L	300	---	---	5 U	<5.0
Dibenzo(a,h)anthracene	ug/L	NA	<2.0	---	5 U	<2.0
Dibenzofuran	ug/L	4	---	---	5 U	<4.0
1,2-Dichlorobenzene	ug/L	13	---	---	---	<5.0
1,3-Dichlorobenzene	ug/L	28	---	---	---	<5.0
1,4-Dichlorobenzene	ug/L	17	---	---	---	<5.0
3,3'-Dichlorobenzidine	ug/L	0.2	---	---	5 U	<20
2,4-Dichlorophenol	ug/L	11	---	<5.0	5 U	<10
Diethyl phthalate	ug/L	110	---	---	5 U	<5.0
Dimethyl phthalate	ug/L	NA	---	---	5 U	<5.0
2,4-Dimethylphenol	ug/L	380	---	<5.0	5 U	<5.0
4,6-Dinitro-2-methylphenol	ug/L	NA	---	<20	10 U	<20
2,4-Dinitrophenol	ug/L	19	---	<22	10 U	<25
2,4-Dinitrotoluene	ug/L	NA	---	---	5 U	<5.0
2,6-Dinitrotoluene	ug/L	NA	---	---	5 U	<5.0
Fluoranthene	ug/L	1.6	<1.0	---	5 U	<1.0
Fluorene	ug/L	12	<5.0	---	5 U	<5.0
Hexachlorobenzene (C-66)	ug/L	0.0003	---	---	5 UJ	<5.0
Hexachlorobutadiene (C-46)	ug/L	0.098	---	---	5 U	<5.0
Hexachlorocyclopentadiene (C-56)	ug/L	450	---	---	5 U	<5.0
Hexachloroethane	ug/L	6.7	---	---	5 U	<5.0
Indeno(1,2,3-cd)pyrene	ug/L	NA	<2.0	---	5 U	<2.0
Isophorone	ug/L	1300	---	---	5 U	<5.0
2-Methylnaphthalene	ug/L	19	<5.0	---	5 U	<5.0
2-Methylphenol	ug/L	76	---	---	5 U	<10
3&4-Methylphenol	ug/L	25	---	---	---	<10
4-Methylphenol	ug/L	25	---	---	5 U	---
Naphthalene	ug/L	11	<5.0	---	5 U	<5.0
2-Nitroaniline	ug/L	NA	---	---	10 U	<25
3-Nitroaniline	ug/L	NA	---	---	10 U	<25
4-Nitroaniline	ug/L	NA	---	---	10 U	<25
Nitrobenzene	ug/L	180	---	---	5 U	<3.0
2-Nitrophenol	ug/L	56	---	<5.0	5 U	<5.0
4-Nitrophenol	ug/L	200	---	<22	10 U	<25
n-Nitroso-di-n-propylamine	ug/L	NA	---	---	5 U	<5.0
N-Nitrosodiphenylamine	ug/L	NA	---	---	5 U	<5.0
2,2'-Oxybis(1-chloropropane)	ug/L	NA	---	---	5 U	---
Pentachlorophenol	ug/L		---	<5.4	R	<20
Phenanthrene	ug/L	1.7	<2.0	---	5 U	<2.0
Phenol	ug/L	450	---	<5.0	5 U	<5.0
Pyrene	ug/L	15	<5.0	---	5 U	<5.0
1,2,4,5-Tetrachlorobenzene	ug/L	2.9	---	---	5 U	---
2,3,4,6-Tetrachlorophenol	ug/L	1.2	---	---	5 U	---
1,2,4-Trichlorobenzene	ug/L	99	---	---	---	<5.0

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Sample Location		Rule 57	HMWQ-009	EM-HMP-009	HMSW-006 ¹	HMSW-006 ¹
Lab Sample ID		Water	1104403-01	T13H002-01	E3PY0	T11K055-10
Sampled By		Quality	KEMC	AECOM	OTIE	AECOM
Analyzed By		Values ²	TriMatrix	Trace	USEPA	Trace
Sample Date			4/22/2011	7/31/2013	11/2/2011	11/2/2011
2,4,5-Trichlorophenol	ug/L	NA	---	---	5 U	<5.0
2,4,6-Trichlorophenol	ug/L	5	---	<5.0	5 U	<4.0
PCBs	Units					
Aroclor-1016	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1221	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1232	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1242	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1248	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1254	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1260	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1262	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1268	ug/L	0.000026	---	---	1 U	<0.20

¹ Sample collected from surface of HTDF at north discharge location.

² Rule 323.1057 Part 4 of Part 31 of Michigan Public Act 451 of 1994, as amended. Presented values are protective for surface water that is not used as a drinking water source.

³ Criterion is dependant upon hardness value of the receiving source water. A hardness value of 40 mg/L was used based on the results of regional surface water sampling.

⁴ Field sample result from Eagle Mine staff on August 9, 2013 using HACH Pocket Colorimeter II.

Bolded value denotes parameter detected above detection limit

--- Parameter not analyzed

J -The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.

R -The data are unusable. The compound may or may not be present.

U -The analyte was analyzed for, but was not detected above reported sample quantitation limit.

UJ -The analyte was not detected above reported sample quantitation limit which is approximate.

NA - A value is not available for this parameter